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ABSTRACT

This report provides an overview of Minnesota's Medical Education and Research Costs (MERC) project, which was undertaken to gather data on the costs of medical education and health care research conducted by hospitals, medical centers, and health maintenance organizations and to develop mechanisms to assess the costs across the health care system. It addresses the definition of "medical education" and "health care research," the development of methodologies to distribute costs, state policy goals for medical education and research funding, possible state responses to national health care reforms, criteria to guide the future funding of medical education and research, and allocation of medical education and research funds. An overview of the current medical education and research funding environment is included. The report recommends that the state legislature charge the Commissioner of Health to complete the MERC project and submit a report by February 1995, and that the commissioner establish an advisory task force of representatives of all major stakeholders to assist in the completion of the project. (MDM)

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Future Funding for Medical Education and Research in Minnesota

A Report to the Legislature and Recommendations for Continued Study

March 1994

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Minnesota Department of Health
Health Economics Program
Division of Health Care Delivery Systems

HE129 964

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A Report to the Legislature and Recommendations for Continued Study

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EXECUTIVE SUMMARY

Section 62J.045 of the 1993 MinnesotaCare Act targets medical education and health care research, two elements of the health care system where change is critical for the state's overall reform efforts to succeed. While Minnesota's health reforms will profoundly affect education and research--and the institutions engaged in these activities--their precise impact is uncertain and the state's appropriate policy response unclear. To address these concerns, the Commissioner of Health was charged to conduct the Medical Education and Research Costs (MERC) Project.

MEDICAL EDUCATION AND RESEARCH COSTS

*Subdivision 1. **Purpose.** The legislature finds that all health care stakeholders, as well as society at large, benefit from medical education and health care research. The legislature further finds that the cost of medical education and research should not be borne by a few hospitals or medical centers but should be fairly allocated across the health care system.*

*Subd. 2. **Definition.** For purposes of this section, "health care research" means research that is not subsidized from private grants, donations, or other outside research sources but is funded by patient out-of-pocket expenses or a third party payer and has been approved by an institutional review board certified by the United States Department of Health and Human Services.*

*Subd. 3. **Cost allocation for education and research.***
By January 1, 1994, the commissioner of health, in consultation with the health care commission and the health technology advisory committee, shall:

(1) develop mechanisms to gather data and to identify the annual cost of medical education and research conducted by hospitals, medical centers, or health maintenance organizations;

(2) determine a percentage of the annual rate of growth established under section 62J.04 to be allocated for the cost of education and research and develop a method to assess the percentage from each group purchaser;

(3) develop mechanisms to collect the assessment from group purchasers to be deposited in a separate education and research fund; and

(4) develop a method to allocate the education and research fund to specific health care providers. Minn Stat. Sec. 62J.045 (1993)

PURPOSE

The Commissioner has not yet completed the four itemized tasks (Subd. 3 above) for the MERC Project. These issues involve complex technical and policy issues requiring additional study and discussion. The Commissioner recommends dividing the MERC Project into two discrete and sequential phases. The first includes developing preliminary definitions of key terms, creating an initial "snapshot" of existing education and research activities in Minnesota, and conducting other preparatory steps. The purpose of this report, which completes the first phase, is to frame the relevant policy issues, recommend a process for addressing them, and give overall direction for the project's second phase, which will finish tasks 1 - 4 above.

AUDIENCE

This report's primary audience is Minnesota legislators, who have the authority to design the state's public policies for medical education and research. Other audiences include institutions training health professionals and conducting research, integrated service networks (ISNs) and other health plans, and any other individuals or organizations concerned about Minnesota's ability to improve the quality, accessibility, and affordability of health care for its citizens and to maintain its high quality medical education and research activities.

ISSUES FOR MERC PROJECT

The summary of the activities of the first phase of the MERC project are included in this report. The Commissioner worked with an advisory task force to identify the key issues that need to be addressed related to the funding of medical education and research within the context of health reform. These complex and interrelated issues will need to be addressed by a broad representation of stakeholders and experts over the following year to complete the second phase of the MERC project. The key issues are described briefly below.

Problem Articulation

How will health reform affect education and research institutions?

Currently, patient care costs at institutions engaged in medical education and/or research are generally higher partly because the costs of these activities are built into their total charges. In the competitive environment envisioned by Minnesota's reforms, these institutions may not be able to compete unless changes in funding for education and research put them on a level playing field with non-education and non-research institutions.

How will health reform affect education and research activities?

Proposed changes in Minnesota's health care system may inadvertently harm education and research activities. In a competitive environment, patient care revenues for education and research institutions may decrease, thus restricting resources available to support these vital activities. An eroding patient base may also undermine the quality of clinical training programs.

Are current education and research activities responsive to the health care needs of Minnesotans?

There is a perceived mismatch between the products of education and research activities and the health needs of Minnesotans. Existing education programs, for example, may not be producing the optimal supply, specialty mix, and distribution of health care professionals. Education and research activities may need to be linked more closely to the important changing health care needs and service delivery system.

Scope of MERC Project

How should "medical education" and "health care research" be defined for the purpose of section 62J.045?

Based on work conducted during the MERC project's first phase, the Commissioner recommends the following preliminary definitions: "Medical education" is defined to include the clinical training of physicians, nurses, and dentists (clinical training refers to the patient-care component of health professional education, including clinical rotations for students and residency training for physicians and dentists). "Health care research" is defined to include clinical and other investigations directly affecting

patient care (the research must have been approved by an institutional review board with appropriate "assurances" from the US DHHS or other Federal department or agency). It may be appropriate for the project's second phase to expand, restrict, or revise these definitions.

How should the costs of education and research activities be measured? What portion of these costs is the appropriate focus of section 62J.045?

Several methodologies may be needed to obtain accurate cost estimates. The Commissioner's initial approach estimated total education and research costs for Minnesota's five major education and research institutions and then added back revenues (e.g., from Medicare, NIH, and other outside sources) that covered (some of) the cost of these activities. (Independent checks of these figures are needed, as well as estimates of education and research costs at other institutions.) The MERC legislation focuses on the costs of education and research insofar as they constitute a liability for certain institutions.

Goals for Future Education and Research Funding

Does the state have a role in assisting education and research institutions and/or in reconfiguring education and research activities?

The threshold question in exploring alternative funding for medical education and research is whether the state has *any* role in modifying funding in order to: (1) help institutions engaged in these activities offset the costs associated with them, and/or (2) assure that education and research activities are responsive to health needs and the changing service delivery system. This report assumes the state does have a role: it may be appropriate, however, to critically examine this assumption over the next year.

What are appropriate policy goals for future education and research funding mechanisms?

Suggested policy goals include levelling the playing field for education and research institutions by offsetting the costs of education and research and modifying education and research activities to better match health care and service delivery needs. However, assuring that education and research activities are responsive to identified needs may mean altering the current education and research infrastructure. The challenge may be to assure that future funding modifies education and research activities without destabilizing existing institutions or undermining either the preparation of future generations of health care practitioners or continued advances in knowledge and technology.

Policy Issues for Medical Education and Research

How should the state respond to possible national reforms?

National reforms of education and research, if enacted, would have important implications for Minnesota in developing the appropriate course of action. The state should try to develop public policies for education and research that provide clear direction yet remain sufficiently flexible to enable it to adapt successfully to whatever national reforms may ultimately be enacted. Minnesota should also recognize the national impact of its education and research activities.

How should the state assure that: (1) education and research institutions compete on a level playing field, and (2) education and research activities meet identified needs?

The two broad strategies are to rely either on market forces or regulation. If the state relies on market forces, it's policy options include addressing specific market failures or monitoring the market to see if, in fact, education and research institutions are placed on a level playing field and education and research activities are modified to meet identified needs. If the state relies on regulation, policy options

include creating new or different funding mechanisms (such as the education and research fund proposed in the MERC legislation) to influence the type of education and research activities performed, who sponsors and conducts these activities, and their setting.

Who should pay for medical education and research? How should funding be generated?

Section 62J.045 requires the costs of education and research to be "fairly allocated across the health care system." One way to allocate these costs fairly is to assign them to those who benefit, including individual patients, Minnesotans in general, residents of other states, education and research institutions and their faculty, health professions schools, and health plans. Whichever beneficiaries ultimately pay, options for generating funds include broad based taxes, assessments (e.g., on group purchasers or providers), and surcharges (e.g., on premiums).

Who should decide who pays and how funds are allocated?

Deciding who should pay is a critical public policy decision, which should ultimately be made by the legislature. Deciding how funds should be distributed entails a planning function (e.g., estimating the potential need for certain types of health care practitioners) and an administrative function (e.g., determining which programs meet established funding criteria). These functions could be assigned to a state agency, an existing commission, or a newly-created body or commission.

What criteria should guide the future funding of medical education and research?

Monies collected to fund education and research should be distributed according to pre-established criteria. An initial list includes financial (e.g., funding should be predictable, stable, and sufficient), administrative (e.g., ongoing administration should be simple and inexpensive), educational (e.g., curricular autonomy and flexibility should be maintained), and accountability criteria (e.g., funding should assure accountability of education and research institutions to respond to identified needs).

Policy Issues for Medical Education

How should the match between workforce supply and need be achieved?

Four perceived problems characterize the current relationship between the supply of health practitioners and health needs: 1) surplus of physicians; 2) undersupply of mid-level practitioners; 3) inappropriate generalist/specialist ratio; and 4) uneven geographic distribution of practitioners. To redress these imbalances, the state may first have to develop an informed assessment of health needs; at that time the number, distribution, and mix of practitioners that would best meet those needs, the education activities to produce those practitioners, and the mechanisms to finance those activities could be designed.

How should funds for medical education be allocated?

Currently, most payments for medical education are made to hospitals. Critics argue this contributes to the specialty and geographic maldistribution of health care practitioners. Alternative payment recipients include health professions schools, consortia of such schools and hospitals, residency programs, residency sites (including HMOs, clinics, and other organizations), and individual trainees. Payments could vary (e.g., reflecting the specific cost of the training program) or be uniform per trainee. Payment for graduate education could be restricted to primary care positions or a set number of years of residency training. Training in ambulatory settings should be expanded, though this may require special funding mechanisms.

What should the relationship be between education institutions and consumers of their "product"?

Currently, few linkages exist: this undermines the education institutions' accountability to health plans, group practices, non-education institutions, and other consumers of their "product" for training the number and mix of health care practitioners with the necessary skills and competencies to meet identified needs. Establishing and maintaining greater public accountability is critical for the success of future training programs and for health care reform efforts overall. Key policy issues are how to facilitate stronger and more direct linkages and what role, if any, the state should play.

Policy Issues for Health Care Research

How should funds for health care research be allocated?

In contrast to education, the vast majority of funding for research comes from resources other than payment for patient care. Most funding for research is currently provided through investigator-initiated grants and requests for proposals issued by public and private organizations. Funding for research that is not supported by such outside sources could be allocated based on the potential merits of the research, the qualifications of the researcher, or the track record of the sponsoring institution. Alternatively, institutions could compete for time-limited "block grants" to conduct research or the state could piggyback extra dollars onto the external funding that research institutions currently receive.

Should the future funding mechanism be used to influence health care research?

Health care research clearly is vital for our health care system. Rather than merely assuring that this function continues, the state may also seek to influence the type of research conducted by, for example, funding projects with the greatest potential to produce cost-effective results. However, it is unclear how such a determination can be made and who should make it. The work of the HTAC and the Practice Parameters Advisory Committee should inform discussions about distributing funding for health care research.

RECOMMENDED PROCESS

The legislature should charge the Commissioner of Health to complete the MERC Project and submit a report to the legislature by February, 1995. The report should include the project's findings, conclusions, and recommendations for future funding of medical education and research in Minnesota. The Commissioner should establish an advisory, duly constituted task force of representatives from all major stakeholders. The task force should meet periodically to assist in all elements of the project's second phase, including preparing the final recommendations.

Medical Education and Research Costs (MERC) Task Force Members

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Future Funding for Medical Education and Research in Minnesota

I. INTRODUCTION

Efforts to reform Minnesota's health care system are well underway. The 1992 and 1993 MinnesotaCare Acts have placed Minnesota at the forefront of states implementing major health care reforms. The overall goals of Minnesota's efforts are to control health care costs, expand access to care, and improve the quality of care provided. Until now, the primary focus has been on reforming delivery and financing mechanisms, exemplified by the Integrated Service Network (ISN)--the state's primary new health care delivery and financing model. Other changes aimed at the three interrelated issues of costs, access, and quality include statewide growth limits, a government-subsidized program for the uninsured, a new public-private Data Institute, and a variety of quality enhancement proposals.

Implementation of the overall reform strategy has revealed some other elements of the system where reform is critical for the state's effort to succeed. Two such elements are the financing of health professional education and health care research. While the cost of education and research represent only a relatively small portion (less than 5 percent) of the state's estimated $14 billion (or the nation's estimated $1 trillion) health care expenditures, these activities profoundly affect the entire health care system, including overall expenditures.

Education and research are not "change agents" for health reform. Instead, the structure and financing of these activities may need to be reconfigured because of the changes already underway in our health care system. Health reforms that do not address education and research "would not be viable in the long run because the overall quality and capability of any health care system depends on the renewal of its work force"[1] and on advancements in diagnosis, treatment, and knowledge.

Medical Education and Research Costs (MERC) Legislation

The Minnesota legislature included a section in the 1993 MinnesotaCare Act (1993 Act) requiring the Commissioner of Health (Commissioner) to examine medical education and health care research. The section stems from the certainty that reforms proposed in the 1993 Act would profoundly affect education and research--and the institutions engaged in these activities--as well as the uncertainty about the reforms' precise impact and the state's appropriate policy response. The Commissioner's specific tasks, included in the legislation below, comprise the Medical Education and Research Costs (MERC) project.[2]

> MEDICAL EDUCATION AND RESEARCH COSTS
>
> *Subdivision 1. Purpose. The legislature finds that all health care stakeholders, as well as society at large, benefit from medical education and health care research. The legislature further finds that the cost of medical education and research should not be borne by a few hospitals or medical centers but should be fairly allocated across the health care system.*

Subd. 2. Definition. For purposes of this section, "health care research" means research that is not subsidized from private grants, donations, or other outside research sources but is funded by patient out-of-pocket expenses or a third party payer and has been approved by an institutional review board certified by the United States Department of Health and Human Services.

Subd. 3. Cost allocation for education and research.
By January 1, 1994, the commissioner of health, in consultation with the health care commission and the health technology advisory committee, shall:

(1) develop mechanisms to gather data and to identify the annual cost of medical education and research conducted by hospitals, medical centers, or health maintenance organizations;

(2) determine a percentage of the annual rate of growth established under section 62J.04 to be allocated for the cost of education and research and develop a method to assess the percentage from each group purchaser;

(3) develop mechanisms to collect the assessment from group purchasers to be deposited in a separate education and research fund; and

(4) develop a method to allocate the education and research fund to specific health care providers. Minn Stat. Sec. 62J.045 (1993)

MERC Project

The Commissioner was charged to conduct the MERC project in consultation with the Minnesota Health Care Commission (MHCC) and the Health Technology Advisory Committee (HTAC). The Commissioner, accordingly, has taken the lead on this project and has worked with staff of both the MHCC and HTAC to keep them abreast of the project's progress and to provide opportunity for comment and advice.

The Commissioner has not yet completed the MERC Project's four itemized tasks (Sec. 62J.045, Subd. 3.), which involve complex technical and policy issues requiring additional study and discussion. The Commissioner instead recommends dividing the project into two discrete and sequential phases. The first phase involved establishing the MERC Task Force,[3] beginning to articulate the scope of section 62J.045, and developing preliminary definitions of key terms and an initial "snapshot" of the extent and cost of existing education and research activities in Minnesota.

The work proposed for the remainder of 1994 will comprise the project's second phase. It will require a host of policy decisions regarding the appropriate role of the state, if any, in helping education and research institutions to compete in the new health care system, in assuring that vital education and research activities are preserved, and in assuring that the products of education and research activities are responsive to the population's health needs. To fulfill the statutory charge, the MERC project's second phase will include developing a methodology to create a funding pool for medical education and research and a mechanism to distribute those funds. This phase may also include developing an informed assessment of future health needs. Finally, the MERC project needs to keep abreast of national discussions on reforming medical education and research and be consistent with any national developments.

Guiding Principles

Whatever mechanisms the state ultimately designs for future financial support of education and research should be consistent with the underlying principles as well as the operational objectives of Minnesota's overall health reform initiative. The principles shaping this initiative are greater efficiency in health care organization, delivery, and financing and greater equity in the distribution of health care resources. The avowed goals are to improve the affordability, quality, and accessibility of health care for all Minnesotans. The framework of a health care system to help achieve these goals was outlined in the 1992 and 1993 MinnesotaCare Acts. Within this broad framework, the 1993 Act specifically requires Minnesota's new health care system to encourage and facilitate competition and allow significant flexibility in the structure and organization of the state's new health care delivery model--the ISN. In addition to these global goals for Minnesota's reforms, the central objective articulated in section 62J.045 to guide the design and implementation of alternative funding mechanisms is that the costs of education and research "should be fairly allocated across the health care system" and not be borne by only a few health care institutions.

About This Report

The purpose of this report, which completes the first phase of the MERC project, is to give overall direction for the MERC project's second phase: it reviews the tasks conducted so far, frames the relevant issues, and recommends a process for exploring these issues in more depth and for developing appropriate policy recommendations. The issues for the project's second phase are delineated in the next section of this report. A recommended process for addressing them is then followed by the initial snapshot of current medical education and research in Minnesota and a review of selected local, state, and national activities related to the MERC project.

The primary audience for this report is Minnesota legislators, who have the authority to design the state's public policies for medical education and research. Other audiences include institutions training health professionals and conducting research, ISNs and other health plans, and any other individuals or organizations concerned about Minnesota's ability to improve the quality, accessibility, and affordability of health care for its citizens.

II. ISSUES FOR MERC PROJECT

Problem Articulation

Medical education and research are costly activities. The institutions engaged in them have typically financed a portion of these activities through patient care revenues. Patient care costs at education and research institutions,[4] which include the cost of education and research, are thus generally higher than those at non-teaching and non-research institutions (call this cost difference the education and research "increment"). This increment has traditionally been paid by public and private insurers. However, these payers' willingness to cover this increment in their reimbursements to education and research institutions is eroding. In a more price competitive environment, education and research institutions cannot incorporate the cost of medical education and research in their charges and expect payers to purchase their services. But the education and research increment is vital for maintaining high quality teaching and research. If traditional payers of the increment withdraw support, alternative funding may have to be found.[5] This problem embraces the two interrelated concerns underlying the MERC project: the first focuses on the institutions engaged in education and research (the "institution concern") and the second focuses on education and research activities themselves (the "activity concern").

How will health reform affect education and research institutions?

Education and research institutions may not be able to be price competitive in the health care system envisioned by Minnesota's reform initiatives if the education and research increment continues to be built into their patient care costs. Their "ability to pass along or shift the cost of education [and research] to those payers who are willing to pay higher prices has been severely limited because many public and private payers now restrict their payment to only the services that they believe are necessary for their beneficiaries."[6] As a result, their patient base is shrinking. Managed care plans such as ISNs are particularly reluctant to refer patients to higher cost education and research institutions, "unless they can negotiate discounts in advance."[7] Referrals to these institutions become increasingly limited by contractual arrangements between comprehensive ISNs and purchasers of health care services designed to obtain "the best quality at the lowest cost." Therefore, unless Minnesota's education and research institutions have the ability to cover the increment (and thus are able to compete on a level playing field), they will likely become financially distressed in tomorrow's more competitive environment. The problem may be most acute for Minnesota's major teaching hospitals,[8] which conduct the vast majority of medical education and research in the state.[9]

The University Hospital Consortium (UHC) recently presented a cogent analysis of the problems such institutions face in a system where managed care is the dominant method of health care delivery and financing. The UHC identified a 4-stage market-evolution process. In the fourth stage, which already exists in the Twin Cities metro area[10] and is envisioned for all of Minnesota, "integrated hospital-physician systems compete to provide comprehensive services to defined population blocs. Payer alliances with major providers are solidified." In this type of market, the linchpin for education and research institutions' survival--an adequate supply of paying customers for their services--is threatened. These institutions will no longer be able to rely on patient referrals from community physicians; instead, according to the UHC, they "will have to lower their costs, assume and manage risk, place a new priority on primary care, become part of an integrated health care system that enrolls patients on a capitated-payment basis,"[11] and find another way to pay for their education and research activities.

How will health reform affect education and research activities?

Minnesota's reforms may inadvertently harm education and research activities (the activity concern). In a more price competitive system, patient care revenues used to currently fund education and research may decrease at education and research institutions, threatening their infrastructure (i.e., the critical mass of people, equipment, patient activities, and skills), which is necessary for high quality education and research as well as restricting the resources available to support those activities. In response, the institutions may, for example, limit the number of attending staff (clinical faculty) and the time the remaining staff has available for teaching and supervising future practitioners, or they may reduce funding for research activities. An eroding patient base may also undermine the synergism between education, research, and patient care that is the hallmark of education and research institutions. A substantial patient base is essential for high quality clinical training programs and for providing intellectual stimulus for a broad range of health care research.

Are current education and research activities responsive to the health needs of Minnesotans?

Another dimension of the "activity concern" is the perceived mismatch between the products of education and research activities and the health needs of Minnesotans. The current education system, for example, may not be producing the optimal supply, specialty mix, and distribution of health care professionals. Moreover, the system may not be providing these professionals with the knowledge, skills, and competencies needed in Minnesota's new system, which emphasizes ambulatory care, prevention, and quality assurance and adopts a more population-focused perspective. Education and research activities may need to become more responsive to identified needs and may need to be more closely linked to the important changing health care needs and service delivery systems.

Scope of MERC Project

The scope of the MERC project, and of the future funding mechanisms that may ultimately result from it, largely depends on the operative definitions of the central terms--"medical education" and "health care research." During the first phase of the project, the MERC Task Force developed the preliminary definitions below. These definitions should be reviewed during the second phase, and amended as necessary.

How should "medical education" and "health care research" be defined for the purpose of section 62J.045?

The operative definitions of these terms should reflect the two interrelated concerns (institutional and activity) underlying the MERC project. The definitions should also reflect the Commissioner's concern for feasibility (e.g., the targeted education and research activities must be able to be isolated and their costs measured).

Section 62J.045 does not define "medical education." The term could include the entire range of activities to educate all health care practitioners (physicians, dentists, nurses, allied health providers, chiropractors, podiatrists, etc.) throughout their careers--from undergraduate through graduate and continuing education. Given the concerns identified above, the Commissioner recommends that "medical education" means the clinical training of physicians, nurses, and dentists. Clinical training refers to the patient-care component of health professional education, including clinical rotations for medical, nursing, and dental students (which are now spread throughout the education period) and, more important, residency training for physicians and dentists (so-called graduate medical and graduate dental education). It does not include the classroom and laboratory instruction of nursing, medical, and dental students.

Several reasons underlie this restricted definition. It is the cost of clinical training--not of the pre-clinical component of undergraduate education--that puts education and research hospitals at a competitive disadvantage. Second, the clinical training of these health professionals (unlike the training of many others) is supported to a large extent by patient care revenues. Third, cost data on their clinical training is (relatively) more readily available. Finally, these professionals have the greatest impact on patient care and resources used. (Nevertheless, it may be appropriate for the second phase of the MERC project to revisit this definition and e.g., expand it to include the training of other health professionals.)

> "Medical education" is defined to include the clinical training of physicians, nurses, and dentists.

Section 62J.045 also does not define "health care research." This term can include, for example, all activities on the continuum extending from basic research to clinical research to health services research.[12] Again, given the concerns identified above, the Commissioner recommends that "health care research" include only investigations that directly affect the clinical care of patients. Other types of research that only indirectly affect patient care, such as market research or organizations' internal evaluations of practice patterns or resource utilization, are excluded. Including only research that directly affects patient care is supported by the statute's specific limitation to research "approved by an institutional review board [IRB] certified by the United States Department of Health and Human Services" (DHHS).[13] Such approval is only necessary for research involving human subjects.[14]

> "Health care research" is defined to include clinical and other investigations that directly affect patient care. The research must have been approved by an institutional review board (IRB) which has the appropriate "assurances" from the US DHHS or other Federal department or agency.

How should the costs of education and research activities be measured? What portion of these costs is the appropriate focus of section 62J.045?

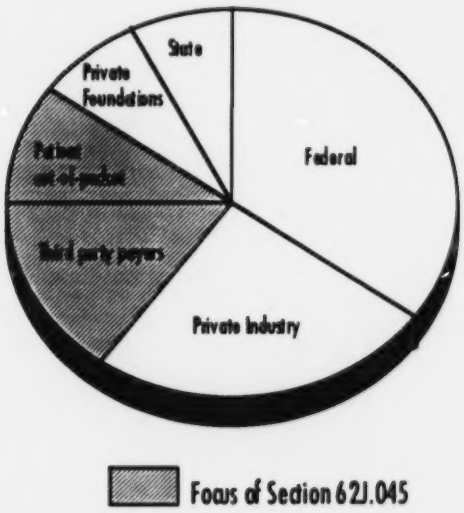
Several methodologies may be needed to obtain accurate cost estimates of all education and research activities and of the portion targeted by the MERC project. The Commissioner's initial approach estimated the total cost of education and research for Minnesota's five major education and research institutions and then added back revenues (e.g., from Medicare, NIH, and other outside sources) that covered (some of) the cost of these activities. (See Section IV below.) Independent checks of these figures are needed, as are estimates of education and research costs at other institutions.

The MERC legislation focuses on the costs of education and research insofar as they constitute a (competitive or unfair) burden for certain institutions. The legislation identifies the portion of research--but not of education--costs that should be considered for alternative financing. The legislation is concerned only with the cost of research funded by patient out-of-pocket payments or payments made by third party payers. Research funded by the National Institutes of Health (NIH) and other Federal agencies or departments, pharmaceutical companies, private grants, donations, or other outside funding sources is explicitly excluded. (See Figure 1.)

A recommendation of the Health Care Commission (originally proposed by the Health Technology Advisory Committee) identified the proportion of research funding that should be exempt from the state's growth limit. The relevant portions of the Commission's recommendation are: any "clinical

research expenses" funded by patient out-of-pocket expenses or a third party payer should be exempt from growth limits if (1) the participating patient is enrolled in an ISN, (2) the research protocol divides the expenses into standard clinical care and other expenses, and (3) the ISN "has negotiated with the entity conducting the research as to which incremental components of the clinical care expenses are exempt."[15] Arguably, these agreed upon incremental "clinical research expenses" exempt from growth limits may be one way to define the targeted "research costs" of section 62J.045.

Figure 1: Support for Health Care Research by Source (Estimated)



Note: Not drawn to scale; the relative contributions of funding sources is unknown.

For education, the appropriate focus could be gross or net costs. The gross cost of medical education equals the total cost of clinical training for physicians, nurses, and dentists. That is:

The (gross) cost of medical education = clinical training costs.

But, there is also a net cost of medical education. During clinical training, students and residents are not only being educated, they "learn-by-doing" and, thereby, provide essential health care services to patients. These services provide a financial benefit to teaching hospitals. Residents substitute for other patient care inputs--that is, if residents do not provide patient care, other (usually more highly compensated) providers would have to. Studies to estimate the financial "benefit" of residency programs yield disparate results. One study concluded that in some settings a fully trained physician would be needed to perform at least 20 percent of the resident's activities if the resident were not available and 35 percent of the resident's activities could be substituted for by mid-level practitioners.[16] Who can function as a substitute for a resident is very dependent on a number of variables, including the particular service and the level of training of the resident (generally, resident productivity increases and the need for supervision decreases with the level of training).

To compute the net cost of medical education, total teaching costs would have to be offset by the

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estimated cost of providing medical services by (substitute) fully trained physicians or mid-level practitioners.

The (net) cost of medical education = clinical training cost - substitute provider costs[17]

If the concern is the competitive disadvantage of education and research institutions, the net cost may be the more accurate measure of their cost burden since it is this cost--not the total cost of clinical training--that puts them at a competitive disadvantage. If, on the other hand, the primary concern is to preserve education activities and assure that they are responsive to health needs, the gross cost may be more appropriate. The total cost of clinical training programs (not the net cost) may need to be redirected to ensure that the education system is reconfigured to meet identified needs.

Goals for Future Education and Research Funding

Does the state have a role in assisting education and research institutions and/or in reconfiguring education and research activities?

The threshold question in exploring alternative funding for medical education and research is whether the state has *any* role in modifying funding in order to help institutions engaged in education and research offset the costs associated with these programs and/or to assure that education and research activities are responsive to health needs and the changing service delivery system. Section 62J.045 clearly assumes the state does have a role (which includes, at a minimum, designing the alternative funding mechanisms). This report begins with the same assumption and seeks to clarify the state's proper role by exploring the relevant policy issues for designing future funding mechanisms for education and research. It may be appropriate, however, to critically examine this assumption over the next year.

What are appropriate policy goals for future education and research funding mechanisms?

The two fundamental goals reflect the dual concerns underlying section 62J.045. The first goal--leveling the playing field--stems from the institutional concern. Reducing or removing from institutions the financial burden of the cost of education and research (i.e., offsetting the education and research increment) may enable them to become more price competitive with non-teaching and non-research institutions. The second goal--meeting identified health needs--stems from the activity concern. By creating new or different incentives to influence the type of education and research activities performed, as well as who sponsors and conducts these activities, a better match may be achieved between needs and the products of education and research.

The MERC project is intended to address the challenges that Minnesota's health reforms pose both to the important *institutions* engaged in medical education and research and to the education and research *activities*. The concerns are intimately linked--it is the education and research institutions that conduct the high quality education and research activities the state has enjoyed. Policies to address the institutional and activity concerns may conflict, however. Assuring that education and research activities are responsive to needs (including the health needs of Minnesotans and the needs of the delivery system) may mean modifying the current education and research infrastructure. While Minnesota should sustain the high quality education and research its residents have come to take for granted, the state should also critically examine current education and research activities. Achieving desirable goals may mean changing the type of education and research activities performed, who sponsors and conducts these activities, their setting, and their funding. Alternatively, placing education and research institutions on a level playing field with non-education and non-research institutions (by offsetting the education and research increment) may result in slower or fewer desirable changes in education and research

activities, e.g., a slower shift toward clinical training in ambulatory settings.

A critical issue for the state is to determine which of the two concerns--institutional or activity--should take priority, in the short term and in the long term. For some, the ability of existing education and research institutions to continue to conduct high quality education and research is the major public policy issue. For others, the major issue is to assure high quality and appropriate education and research activities, and not necessarily to preserve specific institutions. Ultimately, both concerns may be important; the challenge then would be to develop future financing policies that adequately address each without exacerbating the other. Such policies should modify education and research activities without destabilizing existing institutions or undermining either the preparation of future generations of health care practitioners or continued advances in health care knowledge and technology.

Policy Issues for Education and Research

How should the state respond to possible national reforms?

As with health reform generally, national proposals for reforming medical education and research, if enacted, would have important implications for developing the appropriate course of action for Minnesota.[18] Indeed, several issues can perhaps only be adequately addressed at the national level, such as the accreditation of residency programs, efforts to cap the total number of providers in various specialties, and other elements of a comprehensive health profession workforce policy. And, since the Federal government is the single major funding source for both medical education and research, the state's leverage to influence these activities is limited.

Even with the uncertainty of national reforms (when, or even if, they will be achieved in the near future and what changes they may include), Minnesota should try to develop public policies for education and research that provide clear direction yet remain sufficiently flexible to enable the state to adapt successfully to whatever national reforms may ultimately be enacted. Such policies should take account of and respond to the state's unique characteristics and recognize the national impact of its education and research activities and the state's limited ability to affect some aspects of these activities.

How should the state assure that: (1) education and research institutions compete on a level playing field, and (2) education and research activities meet identified needs?

The two broad strategies are to rely either on market forces or on regulation. If the state relies on market forces, it's policy options include addressing specific market failures or monitoring the market's impact on medical education and research. The state would concentrate on the ability of the market to (1) place education and research institutions on a level playing field and (2) modify education and research activities so that the products of these activities are responsive to needs. Market supporters question whether all education and research institutions are, in fact, at a competitive disadvantage. While these institutions have costs that non-education and non-research institutions do not, they also have some competitive advantages. For example, when residents are used in place of physicians to provide patient care, higher volumes of service and lower average costs may result. If these benefits are greater than or equal to training costs, there may be no net adverse impact on the institution's financial performance.[19] Education and research institutions have also used their status for marketing advantage and to attract top-notch faculty. Others who support the market approach do not believe that regulators can accurately assess health care needs or that they can accurately predict, for example, the appropriate number, mix, and distribution of health professionals.

In contrast, "those who support a regulatory approach do not believe that adequate market responses can occur swiftly enough to match the pace of health care reform. In addition, they do not believe that the institutions concerned with educating and training [health care professionals] have any market incentives to reduce their enrollments or change the proportions of trainees in various specialties" or make other adjustments to train the professionals society needs.[20] A proactive regulatory approach for states is supported by a recent report on states' roles in medical education reform which concluded that "the states are the key actors in reforming health professions education, serving as a primary funding source for health professions schools, chief licensors and regulators of health professions, regulators of private health insurance, key providers of Medicaid, and architects of a variety of subsidy and regulatory programs providing incentives for health professionals to choose specialties and locations for practice."[21] If Minnesota relies on regulation, policy options for future education and research funding include creating new or different funding mechanisms (such as the MERC legislation's proposed education and research fund) to influence the type of education and research activities performed, who sponsors and conducts these activities, and their settings.

Who should pay for medical education and research? How should funding be generated?

According to section 62J.045, the Minnesota legislature finds that the cost of medical education and research "should be fairly allocated across the health care system." Assigning the cost to those who benefit is one way to allocate them fairly. Potential beneficiaries (according to the statute, "all health care stakeholders, as well as society at large") include:

- Medical and dental residents, who benefit from their advance training in highly compensated professions.
- Individual patients, who benefit from the care provided by residents, with or without supervision--often in well-staffed, technologically advanced medical centers. In particular, people who are uninsured or enrolled in Medicaid benefit since a large proportion of training occurs in hospitals that provide a disproportionate share of services to these patients.
- Minnesotans generally, who benefit from advances in medical knowledge, a continued supply of highly trained health care professionals, and from access to excellent medical facilities and premier research institutions.
- Teaching hospitals, which benefit from 24-hour staffing by lower-cost residents.
- The faculty of education and research institutions, who benefit from the "extra" hand and coverage residents provide. In some settings faculty also benefit from billed fees for services provided by residents.
- Health professions schools, which benefit from the teaching activities of residents.
- People living in other states (and other countries), who benefit from the product of Minnesota's education and research activities (e.g., research advances are diffused throughout the system; professionals trained here establish practice in other states).

Whichever beneficiaries ultimately pay, options for generating funds include income or other broad-based taxes; assessments (e.g., on group purchasers or gross revenues of [all, or only non-teaching and non-research] hospitals); or surcharges (e.g., on health plan premiums). Care is needed to assure that the specific mechanisms for generating funds allocate fairly the costs of education and research. For example, if assessments on group purchasers is the preferred mechanism, *all* group purchasers should contribute--including those who self-insure. The assessments mechanism would then have to be designed to successfully overcome an ERISA-based challenge. (The Federal ERISA statute has often been used to challenge a state's ability to require self-insured health plans to pay for a variety of health pro-

grams, including programs to fund uncompensated care in hospitals and state-sponsored programs for the uninsured.)

The funds generated should be sufficient to pay for the desired education and research activities. However, funds based on estimates of historic (that is, primarily hospital in-patient) medical education costs may be insufficient if future education activities are more costly than existing ones (e.g., if residency training programs are shifted from less costly in-patient settings to more costly ambulatory settings). Additional resources may be needed.

Several additional questions--specific to medical education--may influence determining who should pay for this activity, including:

Is medical education an education expense or a health care expense?

Some commentators argue that clinical education should be recognized as education and financed as such. Others counter that training and patient care are inextricably intertwined in the clinical education of health care professionals; thus, it is impossible to pay for these two dimensions separately.

Should medical education, especially residency training, be supported with public funding at all?

Supporting health care professionals in training with federal or state funds may not be justified, according to some, when other professional trainees, particularly those that meet a national need, are not similarly supported. They question why public or pooled funds should support the residency training of professionals who will eventually be able to command some of the highest incomes of any group in society.[22] Others counter that such support is necessary given the ever increasing indebtedness of medical school graduates.

Should the state financially support the training of health care professionals who ultimately practice in other states? Alternatively, should Minnesota help pay for training health care professionals who come here to practice after they are trained elsewhere?

There is considerable in- and out-migration of health professional students and residents. For example, in 1993 the Minnesota Association of Public Teaching Hospitals (MAPTH) reported that over the last three years 51 percent of University of Minnesota Medical School graduates entered residency programs in Minnesota and 62 percent of residents training in Minnesota stayed in the state to establish their practice.[23] (The Commissioner has not been able to collect similar data on other programs and other health care professionals and thus cannot estimate the total net loss (or gain) for Minnesota.)

Based on the principle that costs should be borne by those who benefit, beneficiaries in other states arguably should help finance the education of health professionals who train in Minnesota but end up practicing elsewhere (just as Minnesota should help finance health professionals who train elsewhere and practice here). Practical and political considerations, however, may suggest otherwise.

Who should decide who pays and how funds are allocated?

Deciding who should pay is a critical public policy decision, which should ultimately be made by the legislature. Deciding how funds should be distributed entails both analysis and decisionmaking; that is, it includes both a planning function (e.g., estimating the potential need for certain types of health care practitioners) and an administrative function (e.g., determining which programs meet established funding criteria). A state commission, "tied to the political process but buffered from it" could function as the "forum in which both analysis and decision making could take place."[24] In Minnesota, this could mean either creating a new commission to perform these specific functions or assigning the functions to one of the existing commissions or bodies already involved in health reform.

Funding for education and research could be pooled into and then distributed from a single fund, or separate education and research funds could be created. A single fund may be easier to establish and less costly to administer. However, separate education and research funds may be advisable if future funding for education and research raise unique issues (e.g., if the money collected is used to reform education but only to continue current research activities) or if the allocation criteria for education and research funds differ significantly. (The MERC legislation calls for creating "a separate education and research fund.")

What criteria should guide the future funding of medical education and research?

Section 62J.045 requires the Commissioner to design a new strategy to help finance medical education and research. Specifically, the Commissioner must develop a "mechanism" to collect monies and a "method" to then distribute them. An initial list of criteria to guide the overall design of this strategy includes:[25]

Financial criteria

1. The strategy should be budget neutral for the state.
2. Funding should be predictable, stable, and sufficient to achieve desired policy objectives.

Administrative criteria

1. Implementation should be administratively feasible.
2. Ongoing administration should be simple and inexpensive.

Accountability criteria

1. Funding should assure accountability of education and research institutions; e.g., to educate the number and mix of professionals to meet the needs of the delivery system and of the public.

Educational criteria

1. Curricular autonomy and flexibility should be maintained.
2. Curricular elements responsive to population health needs should be fostered.
3. Incentives should favor high-quality programs.
4. Quality control of education programs should be assured.

Research criteria

1. Research activities responsive to population health needs should be fostered.
2. Funding should assure continued high quality research.

Policy Issues for Medical Education

How should the match between workforce supply and need be achieved?

At least four perceived problems characterize the current relationship between the supply of health professionals and health needs: 1) surplus of physicians; 2) undersupply of mid-level practitioners; 3) inappropriate generalist/specialist ratio; and 4) uneven geographic distribution of practitioners. Concerns are also raised that newly-trained health professionals generally are ill-prepared to meet some of the changing demands they will face resulting from health system reform, medical advances, and changing demographics.[26]

1) Over the past 25 years the number of physicians has grown four times as fast as the overall population, increasing the number of physicians per 100,000 population from 148 in 1965 to 244 in 1990. (In 1992 there were 255 physicians per 100,000 population in Minnesota.[27]) Some argue this number already exceeds that required to meet needs;[28] but there is no debate that if left unchecked, the growth in the number of physicians will certainly result in oversupply.

   Minnesota's reliance on managed competition as the vehicle for health care reform may have significant consequences for physician supply. Physician staffing requirements are generally lower in managed care organizations than in fee-for-service settings. As the state relies more heavily on large managed care organizations to provide health care services, the overall need for physicians may decrease. Moreover, since managed care organizations have "tended to employ a complement of physicians that is much more heavily dependent on generalists than is the case in nonmanaged care settings" demand for generalist physicians may increase while employment opportunities for many specialists may decline.[29]

2) Mid-level practitioners, especially nurse practitioners (NPs) and physician assistants (PAs) can extend or substitute for many services provided by physicians.[30] Some suggest that since NPs and PAs are trained more quickly and less expensively than physicians, increasing their supply can be an effective strategy for reducing costs and increasing access, particularly to primary care services. There is growing concern, however, about the increasing number of NPs and PAs who respond to financial and practice incentives by choosing specialty careers.

   There is disagreement about the need for additional NPs and PAs. The PPRC notes that "anecdotal reports suggest that demand for [NPs and PAs] is already outstripping supply" (e.g., some hospitals, for example, are having difficulty filling their authorized positions for PAs).[31] According to others, whether the nation is training too many, too few, or just enough mid-level practitioners has never been studied systematically. Accordingly, "funding to train nurse practitioners, physician assistants, and nurse midwives now bears no relationship to any articulated national goals."[32]

3) The U.S. has a higher ratio of specialists to generalists than other western countries.[33] Whereas a 50:50 specialist/generalist ratio is common elsewhere, two-thirds of all practicing physicians in the U.S. are specialists. Moreover, the relative number of specialists to generalists is growing; currently only 24 percent of graduating medical students select primary care careers. Higher ratios of specialists tend to increase overall health care expenditures, in part because specialists are compensated more highly than generalists and "broadly trained generalists appear to be more parsimonious in their use of medical resources than their more narrowly trained specialty colleagues."[34] A 50:50 specialist/generalist ratio for practicing physicians is a goal of many government commissions and professional organizations.[35]

The renewed emphasis on primary care may require retraining health care practitioners currently providing specialized care. This, in turn, may require developing new (re)training programs for mid-career professionals. Among the issues that should be addressed regarding such programs are their feasibility; who should develop, conduct, and sponsor them; the programs' most appropriate setting; and their estimated costs. Retraining may be one of the cheapest, most efficient means of redressing the specialist/generalist imbalance. Retraining specialists could increase the number of generalists while decreasing the number of specialists, and it could take less time and be less costly than training a new practitioner.[36] Some question, however, whether specialists could be effectively or efficiently "retrained" to assume the fundamentally different role of generalists.

4) The geographic distribution of physicians leaves many rural communities underserved. Rural areas have traditionally relied on general practitioners (i.e., family practice physicians) for primary care. But there are too few family practice physicians (to replace the retiring generalists) and other primary care physicians--internists and pediatricians--disproportionately favor metropolitan areas.[37] Physician to population ratios are much higher in metropolitan areas (in 1986 the ratio was 230 physicians per 100,000 population in metropolitan and 98 per 100,000 in non-metropolitan areas). However, physicians are not uniformly distributed within metropolitan areas, leaving some inner-city areas underserved as well. Between 1963 and 1980, urban office-based primary care physicians, for example, declined twice as fast in poverty areas than in non-poverty areas.[38]

To redress these four perceived imbalances, the state may first have to develop an informed assessment of heath care needs; at that time the number, mix, and distribution of health care professionals that would best meet those needs, the education activities to produce those professionals, and the mechanisms to finance those activities could be designed. The state could build on existing assessments of needs for specific populations to develop a comprehensive needs assessment for the state. Developing such an assessment should permit input from all major stakeholders, including existing education and research institutions, health care plans, health professions schools, group purchasers, and the public. The state also does not have an accurate estimate of the number, mix, and distribution of health professionals currently practicing in the state. The Office of Rural Health (ORH) in the Department of Health will soon be able to provide the latter. Beginning in 1994, the ORH will annually report results from its survey of health professionals, including physicians, nurses, and dentists, as they renew their licenses (annually for physicians and dentists and biannually for nurses). The survey will offer, for the first time, information on how many licensed practitioners actually practice in Minnesota, where they practice in the state, and in what specialty.

A 1993 Prospectus from the Minnesota Association of Public Teaching Hospitals (MAPTH) includes a number of specific recommendations for modifying current education activities in Minnesota in order to achieve the appropriate type, specialty mix, and geographic distribution of physicians--with the necessary skills, training, and competencies. While the MAPTH prospectus focuses on physicians, many of its recommendations apply to the training of other health professionals as well.[39]

How should funds for medical education be allocated?

Allocating education monies (from the "education and research fund") involves determining who should receive payment for medical education, how payment amounts should be calculated, and what education activities should be funded. Currently, most payments for medical education are made to

hospitals. Many argue this contributes to the specialty and geographic maldistribution of health care professionals since it provides "an incentive for hospitals to support inpatient based residencies in the procedurally oriented specialties for which their GME costs are reasonable well reimbursed."[40] Alternative payment recipients include health professions schools, consortia of health professions schools and several hospitals, residency training programs, residency training sites, and individual trainees. Recipients could also be unspecified, with payments channeled to whoever incurs the expense.

Section 62J.045, Subd. 3(4) states that the alternative financing mechanism should ultimately allocate funding for education and research to specific "health care providers," but it does not define this term. Guided by definitions of this term in other Minnesota statutes[41] and the goals of the MERC project, "health care provider" could include any person or organization that provides health care or medical care services within Minnesota and receives compensation for providing health care services or has the authority to directly bill a group purchaser, health carrier, or individual for providing health care services.

Payment amounts for various training programs could vary depending on the specific cost of the program. However, since such costs vary substantially across education institutions because of payments to supervisory physicians, historical inefficiencies, and other factors, this payment method could effectively penalize efficient hospitals.[42] Alternatively, payment amounts could be uniform per trainee, regardless of program or specialty. But this ignores the significant cost differences between different types of residency programs. Training a first year surgical resident, for example, is more costly than training a final year thoracic surgery resident, who requires much less supervision, generates revenue, and may on balance be a financial asset to the institution. As far as possible, payments for medical education should be calculated to reflect the true cost of training programs; they should not subsidize inefficiencies in either clinical practice or support services.

Two allocation issues demand special attention. First, residents are currently funded for the duration of their training, ranging from 3 years (e.g., for family practice or internal medicine) to 8 years (e.g., for some surgical subspecialties). The average residency training period for physicians is now 4.4 years (versus 3.0 years two decades ago), reflecting the growing proportion of residents seeking specialty training. Some suggest financial support should be provided only for primary care positions or only for the first 3 years of training. Others argue that even though this may increase the number of generalists, well-trained professionals are needed in all specialties and, therefore, all residency positions should be funded for the full length of training.[43] Still others suggest there should be no support for residents beyond basic preparation for initial certification (e.g., if a resident already certified in one specialty seeks additional training in another). Many residents seeking such advanced training will enter already oversupplied specialties and since these specialties often are most able to generate funding from patient care billings it is questioned whether the residents should receive federal, state, or private sector support.[44]

Second, funding education in ambulatory settings raises particularly vexing concerns. The settings for medical education are linked to the distribution of funds. As noted above, nearly all funding for medical education has historically flowed to hospitals and, accordingly, the training of nurses, dentists, and especially physicians, has been largely hospital inpatient-based. Efforts to incorporate ambulatory care experiences into training have been stymied to some extent by the lack of change in medical education financing, even though a growing number and spectrum of conditions and patients are now treated in ambulatory settings (a trend unlikely to be reversed). As one physician recently noted, "the emphasis

on ambulatory care is increasing in all specialties, and it is essential that the financing of graduate medical education be reformed" in order to facilitate giving health care providers "training that is suitable to the demands of future patients."[45] It is generally agreed that this means more training is needed in ambulatory settings.

Financing issues are seen as a major barrier to expanding training in ambulatory care. The AAMC identified three such issues: (1) training in ambulatory settings increases the cost of a practice; (2) physician productivity declines when residents are included in the practice; and (3) the treatment of ambulatory patients does not generate the revenues that inpatient care produces.[46] In addition, there is no Medicare indirect medical adjustment in ambulatory settings. In short, "when education is introduced into an ambulatory setting, costs go up but revenue remains flat or even declines as productivity falls."[47] The AAMC also notes that since students and residents have different capabilities, objectives, and opportunities for financial support, separate financing strategies for ambulatory care training should be developed for these two groups.

Some suggest that dollars currently used for medical education could be redistributed to pay for ambulatory care. However, if training in ambulatory settings is more costly than in in-patient settings, basing the state's proposed education fund on estimates of the current cost of (largely in-patient based) medical education may be insufficient to pay for expanded training in ambulatory settings. Additional funding would have to be secured for such educational opportunities to routinely become part of the training of health care practitioners.

What should the relationship be between education institutions and consumers of their "product"?

Currently, few linkages exist: this undermines the education institutions' accountability to health plans, group practices, non-education institutions and other consumers of their "product" for training the number and mix of health care practitioners with the necessary skills and competencies to meet identified needs. Establishing and maintaining greater public accountability is critical for the success of future training programs and for health care reform efforts overall. Key policy issues are how to facilitate stronger and more direct linkages between education institutions and the consumers of their product and what role, if any, the state should play.

Issues for Health Care Research

How should funds for health care research be allocated?

In contrast to education, the vast majority of funding for research comes from resources other than payment for patient care. Most funding for research is currently provided through investigator-initiated grants and requests for proposals issued by public and private organizations. Funding for research that is not supported by such outside sources often comes (directly or indirectly) from patient out-of-pocket expenses or a third party payer. Research funded by these latter sources is the focus of section 62J.045.

Distributing the research support from the proposed education and research fund involves determining what research activities should be funded and how payment amounts should be determined. Funds could be allocated based on the potential merits of the research, the qualifications of the researcher, or the track record of the sponsoring institution. Institutions could compete, for example, for time-limited "block grants" to conduct research, or receive funding for specific research projects. Or the state could piggyback extra dollars onto the external funding that research institutions currently receive. A concern with the latter approach is that it may lock in the status quo if funding from the new fund flows only to institutions with a track record of receiving external research support.

A condition for receiving monies from the fund could be public dissemination of the research findings and conclusions; that is, research would not be funded unless the recipient of the funds agrees to share the results.

Should the future funding mechanism be used to influence health care research?

Health care research clearly is vital for our health care system. If an alternative funding mechanism is developed to assure that this function continues, should such a mechanism also seek to influence the type of research conducted? Or should it simply fund existing activities, interfere as little as possible with the future research agenda (of investigators, institutions, and organizations), and (perhaps) make up for any shortfalls in future federal funding? If the state wishes to influence research, its research priorities would first need to be established. But there is currently no mechanism or process to define these priorities.

The state may also seek to fund research that existing funders have not or are reluctant to fund. The state may, for example, want to fund projects with the greatest potential to produce cost-effective results. However, it is unclear how such a determination can be made and who should make it. The state may also wish use the research fund to facilitate development of "community-based research networks" to promote research that is more likely to be responsive to the state's needs.[48] The work of the HTAC and the Practice Parameters Advisory Committee should be incorporated into discussions about distributing funding for health care research.

III. RECOMMENDED PROCESS

The second phase of the MERC project should be open and provide ample opportunity for participation by the public and all interested groups. The Department of Health, which conducted the project's first phase, is well-positioned to assume responsibility for the second phase as well. Accordingly, the legislature should charge the Commissioner of Health to complete the MERC project and submit a report to the legislature by February, 1995. The report should include the project's findings, conclusions, and recommendations for future funding of medical education and research in Minnesota.

To assist the project, the Commissioner should establish an advisory, duly constituted task force of representatives from all major stakeholders. The task force should meet periodically and participate in all elements of the project's second phase, including preparing the final recommendations. Since medical education and research raise many different issues the Commissioner may wish to explore alternative means to address these topics separately. For example, the Commissioner may create two distinct advisory task forces for education and research (with appropriate communication links between them) or establish subcommittees for education and research within a single task force.

Restructuring the financing of medical education and research is vital to any comprehensive health care reform. Integrating the Medical Education and Research Costs project into Minnesota's ongoing health reform initiatives, therefore, is crucial to the success of both the MERC project and Minnesota's overall reform efforts. The relevant functions and relationships between the proposed MERC advisory task force and existing committees and boards (including the Minnesota Health Care Commission, Regional Coordinating Boards, and the Health Technology Advisory Committee) should also be clearly delineated. Explicit responsibilities and clear communication links among these entities will help to coordinate, and avoid duplicating, efforts.

IV. SNAPSHOT OF CURRENT ENVIRONMENT

Medical Education

The average time for training physicians is approximately 8 years after a baccalaureate degree is obtained. The MD degree is earned at about midpoint of this formal training period. During the first 4 years (post baccalaureate), referred to as "undergraduate medical education," future physicians are enrolled in medical school. "Graduate medical education" (GME) refers to the subsequent residency training period of at least 3 years during which physicians refine their clinical skills to become generalists or specialists. Residency training generally ranges from 3 to 8 years (e.g., 3 years for general internists or family practitioners, 5 years for general surgeons, and 8 years for some surgical subspecialists).

The formal training for dentists also follows an initial 4 years of college. Similarly, the 4-year undergraduate dental education ends with the first professional degree. Unlike medical school graduates, however, only about 37 percent of dental school graduates enroll in post-doctoral programs immediately upon graduation (an unknown number return for advanced training after entering practice). About two-thirds of such dental residents are in one-year general practice residency programs and one-third in specialty programs (e.g., pediatric dentistry, orthodontics, periodontics).[49]

Nursing education is significantly different: usually it begins with a high school--not a college--degree. More than 1,400 nursing education programs in the U.S. prepare students to become registered nurses (RNs). They represent three different institutional settings and approaches to education: associate degree programs, diploma programs, and baccalaureate programs.[50] Two-year associate programs are typically part of a community college and now train about 50 percent of the nursing student population. Diploma programs, typically 3-year, hospital-sponsored programs, educate about 10 percent of students. Baccalaureate programs are usually part of a college or university and require 4 years of training. In addition, many programs exist for nurses with associate degrees who later return to obtain a baccalaureate degree. A relatively small number of RNs pursue Masters or Doctorate degrees (e.g., in Minnesota in 1993, only 84 out of 1810 nursing degrees were graduate degrees). Most of these advanced degrees are for nurse practitioners, nurse midwives, and nurses pursuing administrative or academic careers. A few nursing schools (including the University of Minnesota and the College of St. Catherine) have recently created "post masters" programs for nurses returning for additional advanced training.

Funding for Medical Education[51]

The cost of, and funding for, undergraduate and graduate medical education differ markedly. Undergraduate medical (and dental) education is financed by students' tuition and fees, state and local appropriations, medical service revenue, research grants, university support, gifts, and endowment earnings.[52] Undergraduate medical and dental education in the clinical setting, directed by the professional schools, is not recognized explicitly by any payment system, but like other academic costs, it has been financed indirectly. Graduate medical education, in contrast, has traditionally been funded by patient care revenues to hospitals and other service providers.[53] Generally, the cost of GME has been considered a part of hospital costs and funding for GME has been tied to hospital reimbursement.

Graduate medical education has both direct and indirect costs. Direct costs include residents salaries and fringe benefits, supervising faculty salaries and fringe benefits, and support required to

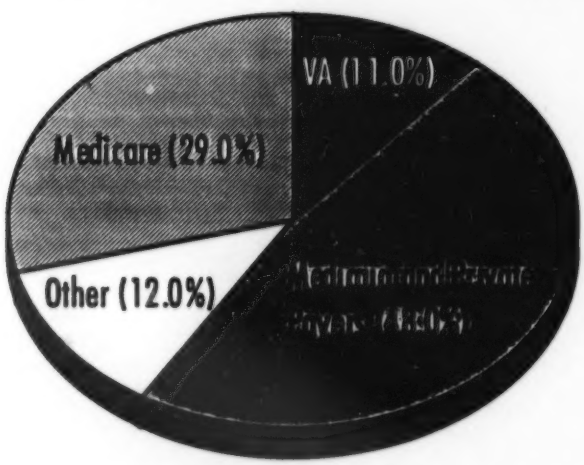
maintain training programs, including program administration and classroom space. Indirect costs result from greater use of ancillary services because of the residents' inexperience; the tendency to try to make a more accurate diagnosis for educational purposes; the decreased productivity of nurses and other employees who have to assist the new residents; and increased record keeping requirements.[54]

The Federal government is the largest single explicit funder for GME. The VA and Department of Defense combined finance the training of about 15 percent of residents. The Federal government also subsidizes (through Title VII of the Public Health Services Act) the training of physicians in selected specialties, including family practice, general internal medicine, and general pediatrics. Most federal financing for GME, however, is through Medicare. The two components to Medicare GME reimbursements are explicit funding (approximately $1.6 billion in 1992) for the direct costs of GME and an Indirect Medical Education (IME) adjustment (approximately $3.6 billion in 1992) as an add-on to hospitals' DRG-reimbursement rates. The IME adjustment, added to each DRG payment to teaching hospitals, is based on a complex formula that includes factors such as the ratio of residents to beds and the percentage of Medicare patients served.[55]

Medicare's IME adjustment is different from the indirect cost of GME. In fact, the IME adjustment "was not designed to support teaching per se."[56] Rather, it was meant to compensate teaching hospitals for their relatively higher inpatient operating costs, attributable to the disproportionate share of critically ill patients (i.e., different case-mix) and uncompensated care that is typical of such hospitals, the wide range of services and technologies they must offer, *and* the physician education process.[57]

Other funders generally do not explicitly pay for GME. Private third party payers, for example, support GME only to the extent to which they are willing to pay the teaching hospitals' (relatively higher) charges, which include the cost of GME. Unlike Medicare, they do not separate payments for GME. The role of state Medicaid programs in funding GME has diminished in recent years; most of these programs now pay hospitals below cost. Figure 2 shows the relative contribution of Medicare, the VA, and Medicaid and private payers to the direct cost of GME.

Figure 2: Sources of Total National Expenditures for the Direct Costs of Graduate Medical Education, 1991



"Direct Costs" include salaries and fringe of residents, salaries and fringe of supervising faculty, and allocated overhead costs.
"Other" category includes Department of Defense, state and local support, and faculty practice plans.

Source: AAMC. Academic Medicine and Health Care Reform: Graduate Medical Education, Washington, DC: AAMC, 1993

An often overlooked source of support for medical education and research are the physicians in education and research institutions, who provide the large majority of medical education. They utilize professional income generated from patient care activities to directly support graduate and undergraduate medical education as well as research programs. Professional income forms the foundation of salary support for these physicians and indirectly enables the creation of the essential critical mass of physician faculty at such institutions.

The total costs of GME are not precisely known. Estimates range from $6 to over $10 billion annually. Ebert and Ginzberg, for example, estimate the total funding for GME from third party payers alone to be about $10 billion in 1991.[58] The American Association of Medical Colleges (AAMC) puts the direct cost of GME at approximately $5.2 billion in 1991. According to the AAMC, there is no generally accepted estimate of the indirect cost of graduate medical education.[59]

Health Care Research

Health related research stretches on a "continuum extending from basic biomedical research through behavioral, clinical, and applied research to traditional health services research."[60] Basic biomedical research (or basic science research) seeks to identify the fundamental properties of life; these are investigations with the main purpose of finding out how nature works. Behavioral and clinical research then apply the findings of basic research to explore, for example, any useful techniques that may be developed into new diagnostic or therapeutic interventions. At the other end of the continuum is health service research which investigates the process of health care, including quality, patient satisfaction and other outcomes, health care costs, and the distribution of resources and services. A principle goal of health services research is to improve the quality and efficiency of health care.

Most health care research occurs in academic health centers, especially in their health professions schools and major teaching hospitals.[61] The majority of federal funding for health care research, for example, is awarded to such centers. The tripartite mission of academic health centers--teaching, research, and patient care--makes them particularly well-suited to conduct research. Close proximity between researchers and patients, for example, stimulates new research and can speed the transformation of new knowledge into cutting-edge patient care. Similarly, students and residents working closely with clinical and research faculty in the academic environment reinforces the synergism between research and education.

In addition to specific grant-supported research projects, Robert Heyssel, the past president of The Johns Hopkins Hospital, has described the unknown (but possibly significant) amount of research occurring at education and research institutions that he terms "impromptu investigations." These investigations are "not supported by funded grants or even explicitly acknowledged"; rather, they are "simply funded through the introduction of inefficiency into the patient care process by lengthened operating room times, extra time spent in the radiology suite, or by use of other added resources in investigation, paid for by purchasers of medical care." This kind of research, which according to Heyssel, "often leads to real innovation in clinical practice" is often first publicized through publication in peer-reviewed journal and subsequent translation into practice.[62]

Funding for Health Care Research

Like medical education, health care research also has direct and indirect costs. The direct costs include the salaries and fringe benefits of personnel (e.g., the principal investigators and research assis-

tants), supplies and materials (including computer time), and program administration. Indirect costs "involve the increase in patient care costs, other than those directly financed by the project, perhaps due to a longer hospitalization or the development of complications as a result of the research protocol."[63] These costs are particularly difficult to estimate.

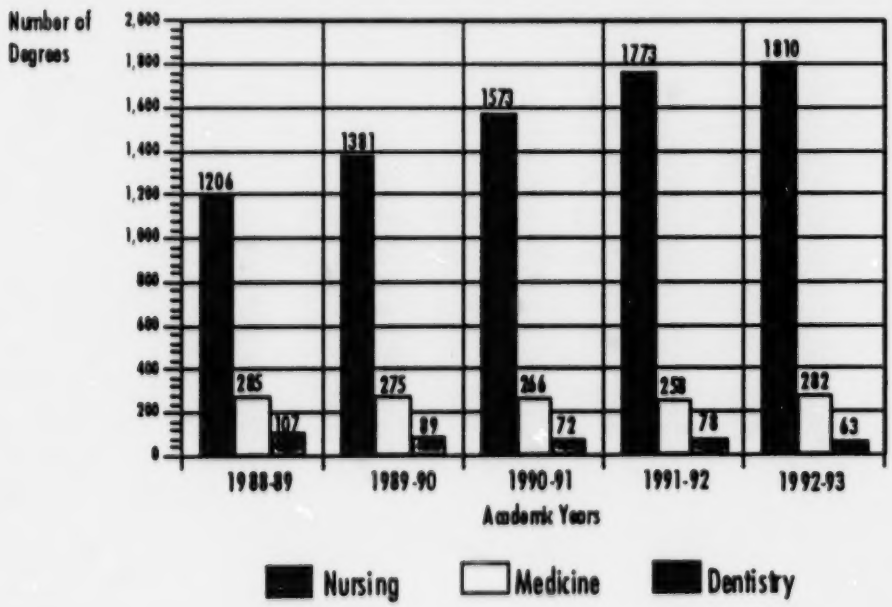
Unlike funding for medical education, however, "the vast majority of funding for biomedical and behavioral [including clinical] research comes from resources other than payment for patient care."[64] The Federal government is the single largest source of funding for health care research, most of it through the National Institutes of Health (NIH). In addition, significant funding comes from private firms, including pharmaceutical, device, and equipment manufacturers. Finally, limited funding for research is provided by foundations, charitable organizations, state government, and other organizations.

Such external funding typically covers the direct cost of research but not the full indirect costs, which must then be paid by the patient and/or third party payer. In many grant-supported clinical trials of cancer therapy, for example, many components of the research, "such as data collection, statistical analysis, the cost of unapproved medicines, research-related laboratory studies and radiologic evaluations, and support staff," are largely funded by the grant, but "the costs of clinical care for the underlying medical conditions have generally been covered by third-party insurance."[65]

Current Environment in Minnesota

During the 1992-1993 academic year, there were 1135 medical students enrolled in the 3 medical schools in Minnesota (University of Minnesota Medical School [869 students], University of Minnesota Duluth School of Medicine[66] [102], and Mayo Medical School [164]). The University of Minnesota graduated 242 physicians that year and Mayo Medical School 40. Over the past 5 academic years, the number of medical school graduates has remained relatively stable (285 graduates in 1988-1989 compared to 282 in 1992-1993). (Table 1)

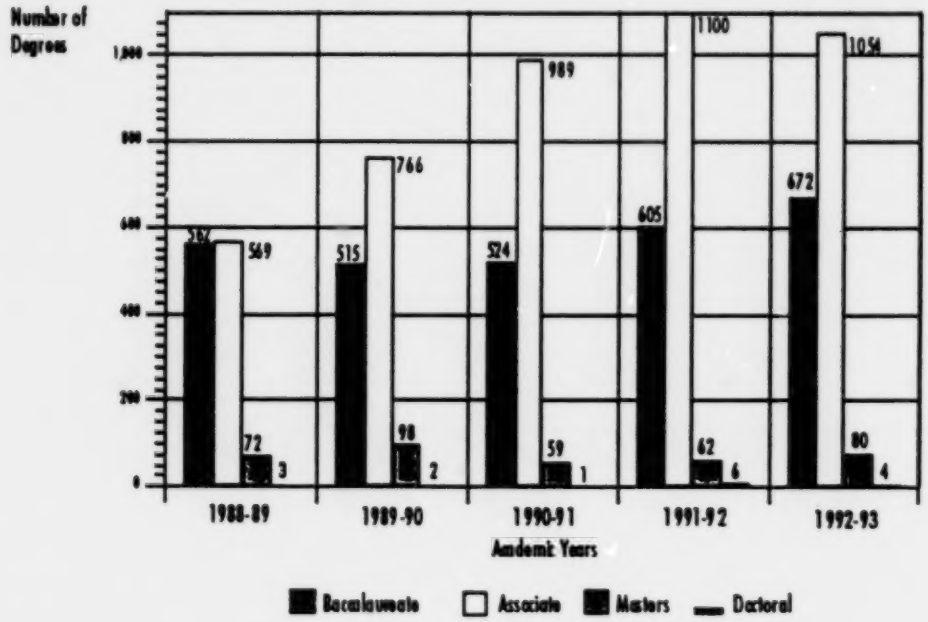
Table 1: Number of Health Professional Degrees Conferred in Minnesota, 1989-1993



The number of dental school graduates has declined significantly over the past 5 years, from 107 in 1988-1989 to 63 in 1992-1993. The School of Dentistry at the University of Minnesota (the state's only dental school) had 315 undergraduate students enrolled in 1992-1993.

In contrast, the number of nursing school graduates continues to increase. In 1988-1989, a total of 1206 nurses graduated from associate, baccalaureate, and graduate programs in Minnesota. For 1992-1993 the number had risen to 1810. The greatest increase was for associate program graduates (increasing from 569 to 1054). Of the 1,726 RN degrees conferred in 1992-1993 by 29 training programs in Minnesota, 1054 (58 percent) were associate degrees and 672 (37 percent) baccalaureate. Also that year, the 4 graduate nursing programs in Minnesota (3 Masters and 1 Doctoral) graduated 80 nurses with Masters degrees and 4 with Doctorate degrees. (Table 2.)

Table 2: Number of Nursing Degrees Conferred in Minnesota, 1989-1993



For the 1992-1993 academic year, there were approximately 2,240 medical residents trained in Minnesota.[67] (Table 3.) At least 25 Minnesota institutions sponsored or conducted one or more residency training program. The vast majority of residents (approximately 87 percent) participated in programs at Minnesota's major teaching hospitals (see footnote 8). An estimated 33 percent of the residents were in primary care programs (family practice, general internal medicine, general pediatrics). (Table 4.) For the same year, 112 dentists were in graduate training programs (87 at the U of M, 18 at Mayo, and 7 at HCMC).

Cost of Education and Research in Minnesota

Identifying the annual cost of medical education and research conducted in Minnesota is a difficult--some suggest an impossible--task. Several groups have unsuccessfully tried to calculate national costs for medical education. (And no one apparently has tried to calculate the cost of research, as defined by the MERC project.) Some people (including some members of the MERC task force) doubt

Table 3: Number of Medical Residents in Minnesota Programs
June 1992 - June 1993 (Preliminary estimate)

Program	Sponsor				
	Mayo	U of M	HCHC	SPR	Totals
Anesthesiology	71	30	--	--	101
Dermatology	20	17	--	--	37
Emergency medicine	1	--	28	--	29
Family practice	37	141	30	27	230
Internal medicine	319	220	69	--	608
Laboratory medicine	46	33	12	7	98
Medical genetics	2	--	--	--	2
Medical oncology	13	--	--	--	13
Neurology	40	35	--	--	75
Neurosurgery	23	12	--	--	35
Ob-gyn	21	32	--	11	64
Opthalmology	23	21	--	--	44
Orthopaedic surgery	71	17	3	--	91
Pediatrics	41	151	--	--	192
Pharmacology	1	--	--	--	1
Physical med & rehab	26	16	--	--	42
Preventive medicine	3	--	--	4	7
Psychiatry	40	40	--	--	80
Radiology (diag & thera)	51	70	--	--	121
Surgery	107	117	29	--	253
Transitional year*	--	--	15	--	15
Urologic surgery	29	15	--	--	44
Total					2238

Note: Mayo data reflects persons, others reflect FTEs. In addition, Duluth Family Practice has 25 family practice residents and Abbott Northwestern Hospital has 31 internal medicine residents.

* Transitional year programs were designed to give broad clinical experience as preparation for subsequent graduate education, and for physicians who have not yet decided on their specialty.

Minnesota will be any more successful. Nevertheless, the state should try to develop at least a reasonable estimate of education and research costs.

An initial survey of the five major teaching and research institutions in Minnesota[68] reviewed their total expenditures for medical education and research during fiscal year 1992 (FY 1992).[69] (Table 5) This approach initially estimated the total costs for education and research during FY 1992 and then added back revenues from federal, state, private, and other sources that covered (some of) the costs of education and research. After adding back these internal and external funding source the following was derived:

> Total expenditures for medical education for FY 1992 was $143,727,801. Of this amount, expenditures not funded by internal and external sources varied among institutions from 16% to 75%, with a mean of 58%.
>
> Total expenditures for research for FY 1992 was $216,968,593. Of this amount, the expenditures not funded by internal or external sources varied among institutions by 8% to 79%, with a mean of 28%.

It was felt that this approach would establish a proxy for how much medical education and research expenditures were subsidized from third party and out-of-pocket payments to these institutions (that is, the remainder after revenues from other sources are subtracted from total expenditures). However, due to the large variation among hospitals in the ranges for non-funded medical education and research expenses, a concentrated effort is probably needed to re-examine the current figures in order to reduce the range of the unfunded expenditures for education and research. Part of the problem with this approach is that many different revenue sources (including, for example, parking fees) are used to offset the costs of these activities. These additional funding sources are difficult to tease out because the institutions' accounting systems are not set up to specifically capture and track them.

Table 4: Number of Primary Care Residents in Minnesota Programs
June 1992 - June 1993 (preliminary estimate)

Program	Sponsor					
	Mayo	U of M	HCMC	SPR	Duluth	Totals
Family practice	37	141	30	27	25	230
General internal medicine	166*	214**	--	--	--	380
General pediatrics	32	107	--	--	--	139
						749

* Includes 24 residents in Preliminary internal medicine.
** All MAPTH general internal medicine residents, including those at HCMC and Abbott Northwestern Hospital.

Table 5: Medical Education and Research Expenditure Survey

	Education	Research
Total Expenditures	$143,727,801	$216,968,593
LESS:		
Federal	$40,886,714	$101,163,140
State	$17,158,768	$11,455
Other Public	$1,741,307	$18,367
Pharmaceutical/Industry	N/A	$37,937,566
Donations/Grants/Subsidies	$568,000	$9,949,274
Other	$685,000	$7,754,000
Expenditures not covered by internal/external funding	$82,688,012	$60,134,791
Percentage range for expenditures not funded by internal or external sources	16% - 75%	8% - 79%
Mean (%) not funded internally or externally	58%	28%

Note: These are aggregate figures for five participating organizations (VAMC, HCMC, Mayo, SRMC & UMHC) for FY 1992.

V. RELATED ACTIVITIES

National Proposals for Education and Research Reform

National legislation

Clinton's Health Security Act proposes new funding for graduate medical education to help achieve certain national policy goals, including: (1) by the year 2002, at least 55 percent of all residents should be enrolled in generalist residency training programs;[70] (2) doubling the number of under-represented minorities in medical school by the year 2000; (3) expanding the supply of physicians serving rural and inner-city medically underserved areas; and (4) expanding training for mid-level providers including physician assistants, nurse practitioners, and nurse midwives. The Act would establish a National Council on Graduate Medical Education to recommend the number of specialty positions for every medical specialty and apportion residency positions nationally to accredited residency programs. The Act would create an "all-payer fund" for GME (the "annual health professions workforce account") by pooling Medicare direct GME payments and surcharges on all health plan premiums. Payments would then be made to the residency training programs. Medicare's indirect medical education (IME) adjustment would be replaced by payments from a new DHHS fund to assist "academic health centers" with the unique costs incurred "in providing health services by virtue of the academic nature of such centers."[71]

Several bills have been introduced to specifically increase the number of primary care providers. For example, The Primary Care Workforce Act of 1993 (S. 1315. Senators Rockefeller, Durenberger, and Pryor) would limit Medicare payment for GME to those programs that comply with certain federal policies, such as a 50 percent limit on the proportion of entry residency positions in a state for specialists. The Primary Medical Care Act of 1993 (S.1215. Senators Kassebaum and Simpson) has similar goals and funding mechanisms.

Federal legislation targeting health care research is less extensive. Senator Harkin has drafted--but not yet introduced--the only proposed legislation calling for a fundamental change in health care research funding. He proposes a medical research trust fund, financed by a $5 a month assessment on each of the estimated 100 million health insurance policies in America. The fund, supplementing existing appropriations to the National Institutes of Health (NIH), would be allocated at Congressional discretion and used solely for health care research.

National professional organizations

Several prestigious national organizations have released recommendations within the past 2 years for medical education reform. (The primary focus is on graduate medical education; some organizations also comment on the education of other health professionals.) Each organization proposes national goals for the appropriate physician supply, specialty mix, and distribution. The goals are to better match the physician workforce with the population's health care needs. Each group also proposed fundamental changes in financing medical education by, for example, controlling the number and distribution of funded residency positions and altering financing policy to include incentives to train in community-based settings, build primary care faculty capacity, and encourage the formation of educational consortia.

The Physician Payment Review Commission (PPRC)[72]

The PPRC recommends that all payers (including Medicare and self-insured employers) be required to contribute a percentage (say 1%) of their payments for medical care to a national pool which would then be used to pay for the direct costs of graduate medical education. The number of residency positions would be limited (and the specialty mix determined) by a newly established federal body, allowing for input from policymakers, the medical profession, and other interested parties. A standardized payment would be made for each approved residency position. Local conditions will influence who should receive the payment (e.g., the hospital, health professional school, or training program).

American Association of Medical Colleges (AAMC)[73]

The AAMC recommends that: (1) incentives be used throughout the training period to "encourage medical students to choose careers that meet national physician supply goals;" (2) all public and private payers be required to contribute to a national fund, separate from payments for patient care services, to finance GME; (3) Medicare IME payments continue; (4) a National Physician Resource Commission be established to (among other duties) set national physician workforce goals; (5) medical education consortia (comprised of medical schools, teaching hospitals, and other organizations involved in GME) be created to "assure the continuity of medical education and to develop centralized support, direction, and coordination of member institutions so that they function collectively to meet changing work force requirements; and (6) that payments for GME should be make "to the organization or entity that incurs these costs."

Council On Graduate Medical Education (COGME)[74]

The COGME recommends: (1) maintaining the current physician-population ratio but training more generalists to eventually achieve a 50-50 generalists-specialist ratio; (2) capping the number of medical school students and of first year residency positions at the number of U.S. medical school graduates plus 10 percent; (3) requiring all payers to contribute to the cost of GME; limiting residency payments to the first 5 years of training.

Josiah Macy Foundation[75]

The Macy Foundation is a private, New York-based philanthropy focused on medical education and health care. In its 1992 Annual Report, the Macy Foundation presented its recommendation for GME reform, based in part on the Foundation's major conference, "Taking Charge of Graduate Medical Education: To Meet the Nation's Needs in the 21 Century" (February 19-22, 1992). The Foundation is concerned about the overall surplus of physicians in the U.S. and accordingly, recommends that medical school enrollment be reduced by 15 percent by year 2000 and the number of residents be capped at U.S. medical school graduates plus 15 percent. The Foundation also recommends (1) reducing non-primary care residents by 50 percent to achieve a 50-50 generalists-specialist ratio; (2) creating a national workforce commission to determine the number and mix of residency slots; and (3) increasing the supply of non-physician providers, especially physician assistants.

Minnesota Initiatives

Both the 1992 and 1993 MinnesotaCare Acts have sections pertaining to health professional education. The 1992 Act called on the University of Minnesota Medical School campuses in the Twin Cities and Duluth to increase the supply of primary care physicians. Specifically, the Medical School was asked "to increase the number of graduates of residency programs who practice primary care by 20 percent" by the year 2000. The Medical School was also requested "to ensure that its curriculum provides students with early exposure to primary care physicians and primary care practice."[76]

To respond to the legislative mandate, the University's School of Medicine has engaged in a variety of primary care physician training initiatives, including establishing rural family practice residencies in Waseca and Mankato, changing the curriculum in the general pediatrics residency to emphasize primary care skills, strengthening the general internal medicine residency, and creating a new medicine-pediatrics residency. In addition, the Medical School formed a Primary Care Task Force in 1993 to make recommendations in the undergraduate curriculum to meet the Act's requirements. The Task Force sought to "define the primary care skills, knowledge, and attitudes that a medical student should possess at graduation, and to recommend a curriculum that would help students achieve those competencies," and make "recommendations for curriculum and other strategies to increase the number of students who enter primary care residencies, and ultimately to increase to at least 50% the number who ultimately practice primary care in Minnesota." The Task Force's November 1993 report, *Primary Care Education and the Medical School*, which includes recommendations to strengthen primary care throughout the medical school's 4-year curriculum, also notes that while curriculum influences students' career choices, there are other powerful factors, including "selection of students at the time of admission, exposure to primary care role models, financial considerations, perceived intellectual challenge of medical school, geographic preference, and administrative attitudes toward and support of primary care."

It should be noted that the University of Minnesota is already among the schools producing the greatest percentage of generalists. The AAMC reports that while only 26 percent of medical school graduates nationwide complete primary care residencies and do not pursue subspecialty training, 37 percent of the U's graduates enter primary care (class of 1987, studied in 1992).[77] (A University of Minnesota survey of the same class found 47 percent of U graduates in primary care practice).

The 1993 MinnesotaCare Act has several other provisions that directly and indirectly affect medical education, especially for primary care practitioners. The Act establishes a loan forgiveness program for up to 8 residents in primary care programs, a loan forgiveness program for up to 4 residents in primary care in underserved urban communities, a grant program for nursing programs that train nurse practitioners to practice in rural areas, and a National Health Services Corps state loan repayment program to assist communities with the recruitment and retention of health professionals in federally designated health professional shortage areas.

Local Activities

Minnesota Association of Public Teaching Hospitals (MAPTH)

A 1993 prospectus from MAPTH outlines a plan for observing, evaluating, and influencing the changes that health system reform will likely have on current medical education and research activities in Minnesota. The prospectus notes that the number, type, specialty mix, of physicians needed for tomorrow's health care system will be different from today's; thus, the "product" of medical education needs to change. The prospectus examines what new education activities, or changes in current activities, may be needed to assure that Minnesota will have the appropriate type, specialty mix, and geographic distribution of physicians--with the necessary skills, training, and competencies--to meet the population's health care needs. Specific issues include:

- What is the appropriate supply of physicians for Minnesota's future health care system?
- What is the appropriate specialty mix of physicians to meet the community's health care needs?
- What training is needed to prepare health care providers for their new roles in tomorrow's health care system?

- What changes in admission policies and recruiting strategies, as well as in education, are needed to assure greater cultural diversity and an acceptable gender mix among physicians?
- What changes in curriculum, residency experiences, and training sites are needed to meet the changing demands on physicians?

The MAPTH prospectus also recommends creating a Medical Education and Research Commission to conduct the state's MERC project and "in an ongoing capacity to oversee the financing of medical education and research and to monitor its ongoing responsiveness to the citizens of Minnesota."[78]

Medical Alley

Medical Alley, a private trade association created to support Minnesota's "healthcare industry," is establishing a blue-ribbon panel to create a "vision of research" that includes a definition of research, a set of principles to address the impact of health reform on research, and specific recommendation to ensure that research continues to improve patient health. The panel expects to produce its document, meant primarily for federal and state policy makers, by the end of June, 1994.

Regional Coordinating Boards

The 1992 MinnesotaCare Act created 6 Regional Coordinating Boards (RCBs) to advise the Commissioner of Health on health care delivery issues for specific geographic areas of the state. The RCBs serve as community forums on a wide range of health care issues. In 1993, the RCB for the Twin Cities metro area (RCB4) identified medical education as one of its priority issues and established the Education Committee to monitor "the education, geographic distribution, retention, funding and training of health care providers." The Committee will also encourage "a unified, systematic approach" for health professional workforce policy.

ENDNOTES

[1] American Association of Medical Colleges. *Academic Medicine and Health Care Reform: Graduate Medical Education* (Washington, DC: AAMC. 1993a).

[2] While research and education are often linked in Minnesota's health reform initiative, important distinctions between these two activities raise different policy issues. For example, the players are different (institutions engaged in medical education are often also engaged in research, but some are involved in only one). Second, funding sources for education and research differ; research is much more likely to have a discrete, explicit funder such as a federal agency or a private foundation while education is primarily funded through patient care revenues. Third, the products differ; most notably, while education predictably results in health care professionals with certain skills and competencies, the outcome of research activities often cannot be forecast. In light of these differences, this report will sometimes discuss education and research separately.

[3] The Commissioner created the Medical Education and Research Cost Task Force (Task Force) to help fulfill the charge of section 62J.045. On the 9-member Task Force are 7 representatives from Minnesota's major teaching hospitals and one representative each from a family practice residency program and a private college with a nursing program. (See page vi for list of members.) This advisory Task Force provided valuable expertise, information, and direction to the MERC Project. The Task Force met 5 times since last fall to help delineate the scope of the project, define critical terms, advise on the development of the snapshot of current education and research activities in Minnesota, and design the project's next steps. It also reviewed previous drafts of this report. The Task Force, as originally envisioned, has now completed its tasks. Its possible future--including its structure, membership, administration, and responsibilities--needs to be determined.

[4] This report will use the term "education and research institution" to refer to any hospital, medical center, clinic, or other organization that currently sponsors or conducts medical education and/or research in Minnesota.

[5] Robert Heyssel, former president of The Johns Hopkins Hospital, captured this problem well when he wrote, "two of the functions of [education and research institution], teaching and research, are clearly in big trouble because purchasers of the third function, patient care, are quite unwilling to pay for the first two when the real product they are trying to purchase is health services of the best quality at the lowest cost." Heyssel R, Constrained Resources in Medical Education and Research. *Health Affairs* 1984;3(4):110-116.

[6] AAMC 1993a:4.

[7] Igelhart JK. The American Health Care System: Teaching Hospitals. *New England Journal of Medicine* 1993;329(14):1052-1055.

[8] "Major teaching hospitals" refers to hospitals or organizations that sponsor or participate in at least 4 approved active residency programs and are thus members of the Council of Teaching Hospitals of the American Association of Medical Colleges. Minnesota's major teaching hospitals include the four

public teaching hospitals (University of Minnesota Hospital, Hennepin County Medical Center, St. Paul Ramsey Medical Center, Veterans Affairs Medical Center), Mayo Foundation (including St. Marys Hospital and Rochester Methodist Hospital), and Abbott Northwestern Hospital.

[9] The Veterans Affairs Medical Center (VAMC) in Minneapolis, one of Minnesota's four major public teaching hospitals, plays a key role in educating health care professionals and conducting health care research. However, the VAMC is unique: it is fully funded through federal appropriations, employs is own health care professionals, and provides services only to VA-eligible patients. Thus, the VAMC is largely outside Minnesota's health care market and, accordingly, is not at a competitive disadvantage as a result of its education and research activities. This may change: the VAMC is exploring opportunities to sponsor an ISN to compete in Minnesota's private health care market.

[10] Igelhart 1993:1054.

[11] *Competing in the Mature Health Care Marketplace: Strategies for Academic Medical Centers.* Oak Brook, IL.: University Hospital Consortium, 1993.

[12] See page 26 below for a discussion of these types of research.

[13] Minn. Stat. Sec. 62J.045 Subd. 2 (1993).

[14] The statute's IRB-approval clause is ambiguous, however. The DHHS's Office for the Protection from Research Risks (OPRR) does not use the term "certified"; instead, it uses "assurances" and grants IRBs single (case-by-case) assurances, multiple project assurances, or cooperative assurances. Research approved by an IRB that has any one of these assurances should be included. Limiting it to research approved by IRBs that have multiple project assurances, for example, would be overly restrictive since only IRBs at 3 Minnesota institutions have such assurances. Further, there are 15 other Federal agencies and departments (in addition to the DHHS) with authority to grant single project assurances. Since all of these agencies and departments now follow the same "common regulations" for granting IRB assurances (i.e., they follow the same regulations observed by OPRR), section 62J.045 should cover research approved by an IRB with assurances from *any* Federal agency or department. The Commissioner accordingly recommends changing this clause to include research that has been approved by an IRB which has assurances from DHHS or any other Federal agency or department.

[15] Minnesota Health Care Commission. *Containing Costs in Minnesota's Health Care System.* A Report to the Governor and the Legislature. 1993:40.

[16] The remainder of residents' time is spent on education-specific and personal activities. Knickman JR, Lipkin M, et al. The Potential for Using Non-physicians to Compensate for the Reduced Availability of Residents. *Academic Medicine* 1992;67(7):429-438.

[17] Others compute the net cost of medical education as the clinical training cost minus the lower provider input costs and increased patient revenues. Then, "if residents produce patient care revenues greater than or equal to their training costs, there may be no net adverse impact on hospital financial performance." Campbell CR, Gillispie KN, Romeis JC. The Effect of Residency Training Programs on the Financial Performance of Veterans Affairs Medical Centers. *Inquiry* 1991;28:288-299.

[18] See section V. below for a review of selected national reform proposals.

[19] Campbell, et al. 1991.

[20] Cohen JJ. Transforming the Size and Composition of the Physician Work Force to Meet the Demands of Health Care Reform. *New England Journal of Medicine* 1993;329(24):1810-1812.

[21] Weissert CS, Knott JH, Stieber BE. *Health Professions Education Reform: Understanding and Explaining State's Policy Options.* White Paper for WK Kellogg Foundation, April 1993.

[22] Ebert RH, Ginzberg E. The Future of GME: Fine Tuning is Not Enough. In, Josiah Macy, Jr. Foundation *Taking Charge of Graduate Medical Education: To Meet the Nation's Needs in the 21st Century* (New York: Josiah Macy, Jr. Foundation, 1992:95-125).

[23] Minnesota Association of Public Teaching Hospitals. *A Prospectus for Medical Education and Research in Minnesota.* Minneapolis, MN: MAPTH 1993.

[24] Mullan F, Rivo ML, Politzer RM. Doctors, Dollars, and Determination: Making Physician Work-Force Policy. *Health Affairs* 1993 (Supplement):138-151. At least two commissions already in place could assume these functions in other states: New Jersey's Advisory Graduate Medical Education Council and New York's Council on Graduate Medical Education.

[25] Adapted from Peinado SC, Eisenberg JM. Financing Graduate Medical Education in Primary Care: Options for Change. In, Institute of Medicine. *Primary Care Physicians: Financing Their Graduate Medical Education in Ambulatory Settings* (Washington DC, National Academy Press, 1989:197-226).

[26] MAPTH 1993:17.

[27] Ibid.

[28] Council on Graduate Medical Education. *Improving Access to Health Care Through Physician Workforce Reform: Directions for the 21st Century.* (Rockville, Md: Bureau of Health Professions, Health Resources and Services Administration, US Public Health Service; 1992).

[29] Mullan et al. 1993.

[30] Presently, there is no physician assistant training program in Minnesota.

[31] Physician Payment Review Commission. Reforming Graduate Medical Education. In, *1993 Annual Report to Congress.* (Washington, DC: Physician Payment Review Commission, 1993:55-85.

[32] Mullan et al. 1993.

[33] The definition of "generalist" (or "primary care") programs varies. According to the AAMC and many other groups, the three primary care residency programs are family medicine, general internal medicine, and general pediatrics. Others include *all* internal medicine programs, as well as obstetrics/gynecology, and/or combined internal medicine/pediatrics. This report adopts the AAMC definition.

[34] Rosenblatt RA, Specialists or Generalists: On Whom Should We base the American Health Care System? *JAMA* 1992;267(12):1665-1666.

[35] Achieving this goal requires a focus on the output of residency programs, not the input. In other words, the number of residents who ultimately pursue generalist careers may be more important than the number of medical students entering primary care residencies. Focusing on the number of residents entering primary care residencies ignores the fact that a significant share of these residents subsequently enter other training programs to pursue specialist careers. For example, in 1991 about 55% of all residents leaving internal medicine programs continued their education in another specialty; only about 29% left these programs to enter practice (the remainder left for other reasons, e.g., substandard performance). Martini CJM. Graduate Medical Education in the Changing Environment of Medicine. *JAMA* 1992;268(9):1097-1105.

[36] This point was suggested by Steve Hillson, MD, Assistant Professor, University of Minnesota. Personal communication.

[37] Barnett PG, Middling JE. Public Policy and the Supply of Primary Care Physicians. *JAMA* 1989;262(20):2864-2968.

[38] Kindig DA, Movassaghi H, et al. Trends in Physician Availability in 10 Urban Areas from 1963 to 1980. *Inquiry* 1987;24:136-146.

[39] MAPTH 1993. See further discussion on page 34.

[40] Vanselow NA. Graduate Medical Education: Time for a Change. In, Josiah Macy, Jr. Foundation *Taking Charge of Graduate Medical Education: To Meet the Nation's Needs in the 21st Century* (New York: Josiah Macy, Jr. Foundation, 1992:127-149).

[41] See, e.g., Minn. Stat. Sec.62J.03, Subd. 8 (1993).

[42] PPRC 1993.

[43] Ibid.

[44] Ebert and Ginzberg 1993.

[45] Eisenberg JM. How Can We pay for Graduate Medical Education in Ambulatory Care? *New England Journal of Medicine* 1989;320(23):1525-1531.

[46] Bentley JD, Knapp RM, Petersdorf RG. Education in Ambulatory Care--Financing is One Piece of the Puzzle. *New England Journal of Medicine* 1989;320(23):1531-1534.

[47] Ibid.

[48] This point was suggested by Steve Hillson, MD, Assistant Professor, University of Minnesota. Personal communication.

[49] American Dental Association. Personal communication, February 4, 1994.

[50] Programs for educating licensed practical nurses (LPNs) are not included in this report.

[51] The clinical training of physicians, nurses, and dentists all add to the total cost of education and research institutions; however, it is generally agreed that residency training for physicians is the most costly. Accordingly, this section will primarily focus on the cost of this element of medical education.

[52] Nationally, state and local appropriations represent approximately 13% of medical schools budgets (the University of Minnesota reports state appropriations equal to 19.8% of the Medical School's 1992-1993 fiscal year budget).

[53] AAMC 1993.

[54] Lave JR. The Cost of Graduate Medical Education in Outpatient Settings." In, Institute of Medicine. *Primary Care Physicians: Financing Their Graduate Medical Education in Ambulatory Settings* (Washington DC: National Academy Press, 1989).

[55] Combined, Medicare's direct and indirect payments equal a mean payment per resident per hospital of more than $70,000 annually in 1992. Since these payments are made only for the portion of days of care attributed to Medicare patients (an estimated 38 percent), "the actual *rate* at which hospitals were being reimbursed for each resident was on the order of $180,000 per year." Mullan et al. 1993 (emphasis in original).

[56] PPRC 1993:61.

[57] AAMC 1993a:11.

[58] Ebert and Ginzberg 1992.

[59] AAMC 1993a:4.

[60] Association of American Medical Colleges (AAMC). *Academic Medicine and Health Care Reform: Health-Related Research* (Washington, DC: AAMC, 1993b).

[61] Ibid.

[62] Heyssel 1984.

[63] Anderson GF, Lave JR. Financing Graduate Medical Education and Biomedical Research: Whose Responsibility? *Health Policy* 1987;7:3-12, 1987.

[64] AAMC, 1993b.

[65] Peters WP, Rogers MC. Variation in Approval by Insurance Companies of Coverage for Autologous Bone Marrow Transplantation for Breast Cancer. *New England Journal of Medicine* 1993;330(7):473-477.

[66] Two year basic science program.

[67] Of these, approximately 23 percent were foreign medical graduates (FMGs). How many FMGs only seek training in this country and how many enter practice in Minnesota (or the US) after training is not known.

[68] University of Minnesota Hospital and Clinic (UMHC), St. Paul Ramsey Medical Center (SRMC), Hennepin County Medical Center (HCMC), Veterans Administration Medical Center (VAMC), and Mayo Foundation.

[69] The cost estimates in this section were prepared with the assistance of the chief financial officers (CFOs) of the 5 participating organizations. The CFOs indicated that they could not provide costs for medical education and health care research as those terms are defined in this report. Instead, the education costs reported here are based on Medicare's definition of "approved [medical] educational activities." These costs include the direct costs of graduate medical education and of 13 additional allied health training programs (including, e.g., medical records, inhalation therapy, and pharmacy residencies). Research costs include the costs of both clinical and basic science research.

[70] Here "generalists" include OB/gyns; an earlier version of Clinton's Act set the proportion at 50 percent and included only family practice, general internal medicine, and general pediatrics.

[71] There are now numerous competing national health care reform bills, only some of which have provisions for reforming health profession education. Many summary comparisons of these bills are available but are not reviewed here.

[72] PPRC 1993.

[73] AAMC 1993.

[74] COGME 1993.

[75] Josiah Macy Jr. Foundation. *Josiah Macy Jr. Foundation: Annual Report* (New York, NY: Josiah Macy Jr. Foundation, 1992).

[76] The legislation defined primary care as "a type of medical care delivery that assumes ongoing responsibility for the patient in both health maintenance and illness treatment. It is personal care involving a unique interaction and communication between the patient and the physician. It is comprehensive in scope, and includes the overall coordination of the patient's health care problems including biological, behavioral, and social problems." Minn. Stat. Sec. 137.38. Subd. 2. (1993)

[77] Slomski A. Will Medical Schools Solve the Primary-care Shortage? *Medical Economics* 1993 (July):87-99.

[78] MAPTH 1993:26.

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